UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,724	06/08/2001	Georgios Ginis	STFUP018	8945

40581 7590 09/19/2005

CRAWFORD MAUNU PLLC
1270 NORTHLAND DRIVE, SUITE 390
ST. PAUL, MN 55120

EXAMINER	
CORRIELUS, JEAN B	
ART UNIT	**PAPER NUMBER**
2637	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/877,724	GINIS ET AL.	
	Examiner	Art Unit	
	Jean B Corrielus	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-62* is/are pending in the application.

4a) Of the above claim(s) *13-20,33-40,53-60 and 62* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,21-32; 41-52 and 61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) _ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on 8/2/05. These drawings are acceptable.

Specification

2. The objection to the disclosure has been withdrawn. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 6, 21-22, 26, 41-42, 46 and 61 are rejected under 35 U.S.C. 102(b) as being anticipated by applicant admitted prior art fig. 3.

As per claim 1, applicant admitted prior art fig. 3 discloses a method and apparatus for reducing noise comprising having a plurality of communication lines see fig. 3 on which signals are transmitted and received, the signals being affected by interference during transmission, each of the communication lines having at least one transmitter 310 and at least one receiver, 311, the method comprising the steps of: collecting information about line signal and interference characteristics of the communication lines using elements 316; creating a model of the line, signal and

interference characteristics of the communication lines using elements 314; synchronizing transmissions of signals inherently between transmitters and receivers(note that in order to establish communication between at least two stations, received signal(s) has to be synchronized with the transmitting entity(ies)(transmitter(s)), and transmitting signal(s) has to be synchronized with receiving entity (receiver(s)) hence such a step is inherently provided by applicant admitted prior art fig. 3; and processing signals using the model to remove interference from the signals using circuit box 315.

Claims 21, 41 and 61 are likewise rejected as they include similar limitations as in claim 1.

As per claims 2, 22, 42, the digital communication system is a DSL system see fig. 4.

As per claims 6, 26, and 46, the signals includes crosstalk signals from adjacent line see page 4, line 7.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3-4, 8-9, 23-24, 28-29, 43-44 and 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art fig. 3.

As per claims 3-4, 23-24 and 43-44, applicant's admitted prior art fig. 3 discloses every feature of the claimed invention but does not explicitly teach whether processing of the signal using the model is done prior to transmission or after reception. However, such limitation does not involve any inventive step. It would been obvious to one skill in the art at the time of the invention to process of the signal using the model prior to transmission or after reception in order to satisfy system's requirements.

As per claims 8, 28 and 48, it would have been obvious to one skill in the art to use QR decomposition to remove interference so as to optimize interference cancellation process.

As per claims 9, 29 and 49, it would have been obvious to one skill in the art to collect line signal and interference by a party other than a user so as to enhance system performance

7. Claims 5, 25 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art fig. 3 in view of Koehn et al.

As per claims 5, 25 and 45, applicant's admitted prior art fig. 3 discloses every feature of the claimed invention but does not explicitly teach the synchronizing comprises using block transmission and reception. However, synchronizing using block transmission and reception is well established in the art for instanced, Koehn et al teaches synchronizing using block transmission and reception see paragraph 0026. Given that it would have been obvious to one skill in the art to incorporate such a teaching in Applicant's admitted prior art so as to ensure that synchronization time is minimized since the signal would have been processed in block or group rather a bit by bit/symbol by symbol basis.

8. Claims 7, 27 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art fig. 3 in view of Wiese et al.

As per claims 7, 27 and 47, applicant's admitted prior art fig. 3 discloses every feature of the claimed invention but does not explicitly teach the interference is removed from the signal on a tone by tone basis. Wise teaches at col. 3, lines 51-62, the removing of interference from signal on a tone by tone basis. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in applicant's admitted prior in order to insure that interference is effectively removed from the signals.

9. Claims 10, 11, 30, 31, 50, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art fig. 3 in view of Reusens et al.

As per claims 10, 11, 30, 31, 50 and 51, applicant's admitted prior art fig. 3 discloses every feature of the claimed invention but does not explicitly teach the step of processing signals using the model to remove interference from signals comprises maximizing a weighted sum of the data rates of the users. Reusens et al teaches processing signals using the model to remove interference from signals comprises allocating energy to each user for transmission of the signals (maximizing a weighted sum of the data rates of the users) see paragraph 0002. It would have been obvious to one skill in the art to incorporate such a teaching in applicant's admitted prior art fig. 3 so as to data bits are not transmitted via affected carriers. Note that the users inherently have to be permitted to send or receive signals at a data rate.

10. Claims 12, 32 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art fig. 3 in view of Carrender.

As per claims 12, 32 and 52, applicant's admitted prior art fig. 3 discloses every feature of the claimed invention but does not explicitly teach the step of processing signals using the model to remove interference from signals comprises dynamically adjusting the frequencies used to send the signals. Carrender teaches transmission of signals using a plurality of frequencies and further teaches dynamically adjusting the frequencies used to send the signals. See paragraph 0009. It would have been obvious to one skill in the art to implement such a teaching in applicant's admitted prior art fig. 3 in order to minimize interference between users.

Response to Arguments

11. Applicant's arguments filed on 8/2/05 have been fully considered but they are not persuasive. Applicant's representative stated that the 102(e) rejection is improper, note that the section of the 102(e) rejection has been changed to 102 (b) in view applicant's admitted prior art. The invention as claimed, reads on the admitted prior art. Hence, it is proper to make the 102(b) rejection, as set forth above. Applicant further stated that the action fails to identify where the cited reference teaches "creating a model of the line, signal and interference characteristics of the communication lines". However, it is noted that the rejection points to element 314 of fig. 3 as the device" creating a model of the line, signal and interference characteristics of the communication lines". In addition, note that in the last office action, the section of 103 inadvertently referred, at times, to fig. 6 instead of fig. 3. Such informality has been corrected above.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Maxi-Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jean B Corrielus
Primary Examiner
Art Unit 2637 9-16-05